Adaptive Chip-Level Channel Estimation for IMT-DS System: DL and UL

SHEIKH, ASRAR and SHAH, FAISAL (2005), Wireless Personal Communications, 35 (4). pp. 383-405.

Abstract

In this paper, chip-level adaptive channel estimation has been explored by using LMS algorithm for wideband CDMA channel estimation. The expression for the optimum step-size is modified for fading channel estimation problem. In addition, a new method is proposed to obtain channel estimates with known pilot symbols which is found to give better results than other methods. For slow fading channels, like pedestrian channel, LMS estimator with no update mode is found to give satisfactory results. For fast fading channels, like vehicular channel, a common decision directed technique of channel estimation is modified to be used at chip-level in the downlink (DL). Anovel despreader-respreader based channel estimator has been proposed to obtain uplink channel estimates at chip level which resolves the deficiencies of conventional methods. The performance of Rake receiver with proposed channel estimation schemes for IMT-DS system – a 3G mobile communication standard – is evaluated in terms of BER.